Technical Manual

MAJOR HAZARDS

AREA WHERE HAZARD CAN OCCUR	HAZARD WHAT CAN HAPPEN IF PRECAUTIONS AND SAFEGUARDS ARE NOT OBEYED	SAFEGUARDS HOW TO AVOID THE HAZARD
ENTIRE MACHINE	Movement of machine can run over or crush body parts between machine and other objects and cause irreparable injury or death.	Keep all people out of Hazard Zone (page 16). Use extreme caution when moving machine. The machine should be properly shutdown (see page 21) before the operator leaves the operator's compartment.
OPERATOR'S AREA	Operation of machine with head, arms, or hands outside of operator's compartment could cause irreparable injury or death if body parts strike or are crushed between machine and outside objects.	Keep head, arms, hands, inside operator's compartment at all times.
REAR SECTION	Ejector blade or false bottom being returned could cause irreparable injury or death if body parts or persons are crushed between ejector blade/false bottom and the rear (payload) section frame.	Keep all hands, arms, legs, feet and persons out from between the front of the rear (payload) section and the ejector blade/false bottom. The machine must be properly shutdown for service (see page 21).
CENTER SECTION (ARTICULATION POINT)	Machine could be steered crushing persons, hands, feet, or legs in the articulation area.	Keep all persons, hands, feet, legs, out of articulation area and off the top and out from under the machine. Machine should be properly shutdown (page 21) before servicing. The machine must also be blocked under the battery, payload end, and center section.
UNDERNEATH DURING SERVICE	Machine raised for service could fall and crush persons or body parts underneath.	If machine must be raised for service, it must be securely blocked so that all wheels may safely turn (see maintenance page 35). The machine must also be blocked under the battery, payload end, and center section.

WARNING

THE MACHINE CIRCUIT BREAKER SHOULD BE IN THE "OFF" POSITION AND THE PARKING BRAKE SET BEFORE THE OPERATOR LEAVES THE OPERATOR'S SEAT. IN AN EMERGENCY, THE OPERATOR CAN STOP THE UN-A-HAULER BY STRIKING THE PANIC SWITCH WHICH TRIPS THE BREAKER. THE UNIT CAN ALSO BE STOPPED BY MOVING THE MACHINE CIRCUIT BREAKER LEVER TO THE "OFF" POSITION.

The machine circuit breaker is not intended as an "ON-OFF" switch for normal operation. Except in an emergency, the Un-A-Hauler should be shutdown by first moving the master switch to the "OFF" position and then moving the machine circuit breaker to the "OFF" position.

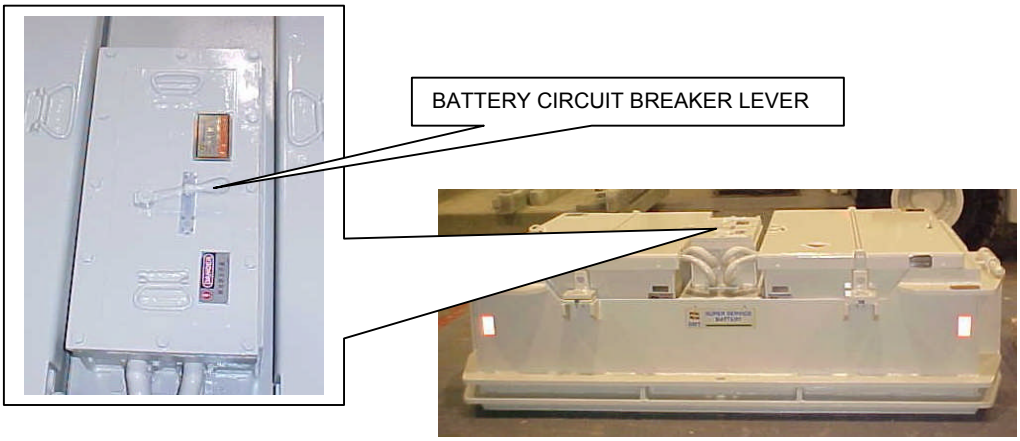
WARNING

ALL ELECTRICAL SWITCHES IN THE OPERATOR'S COMPARTMENT MUST BE IN THE "OFF" POSITION BEFORE MOVING THE BATTERY CIRCUIT BREAKER LEVER TO THE "ON" POSITION.

BATTERY CIRCUIT BREAKER LEVER - The battery circuit breaker is located on the battery. This circuit breaker has 4 positions: "OFF," to de-energize the machine's electrical systems, "TRIPPED," when the circuit breaker is overloaded, "RESET," to reset the circuit breaker after it has tripped, and "ON," for normal operation (Figure 5). The battery circuit breaker should be in the "OFF" or "TRIPPED" position before the Un-A-Hauler is serviced or when the battery plug is being connected or disconnected.

WARNING

ONCE THE BREAKER HAS TRIPPED, IT WILL NOT STAY IN THE “ON” POSITION WITHOUT (FIRST BEING MOVED TO THE "RESET" POSITION, AND THEN TO "ON".



BATTERY CIRCUIT BREAKER
FIGURE 5

WARNING

NEVER ENTER THE ARTICULATION AREA WHILE THE MACHINE IS RUNNING. COMPLETELY SHUTDOWN THE MACHINE AS OUTLINED BEFORE CONNECTING THE STEERING LOCKOUT DEVICE. FAILURE TO OBSERVE THIS PRECAUTION MAY RESULT IN INJURY OR DEATH.

CAUTION

THIS UNIT IS EQUIPPED WITH A CANOPY. BE CAREFUL NOT TO HIT YOUR HEAD WHEN ENTERING OR LEAVING THE OPERATOR'S COMPARTMENT.

WARNING

IN THE EVENT OF AN EMERGENCY, THE UN-A-HAULER MAY ALSO BE SHUTDOWN BY STRIKING THE PANIC SWITCH. WHEN THE PANIC SWITCH IS STRUCK, THE MACHINE CIRCUIT BREAKER WILL TRIP. THIS DISCONNECTS THE MOTORS AND APPLIES THE AUTOMATIC EMERGENCY BRAKE. BE PREPARED FOR THE SUDDEN STOP WHEN THE PANIC SWITCHS ARE STRUCK.

THIS COMPLETES THE SHUTDOWN PROCEDURE.

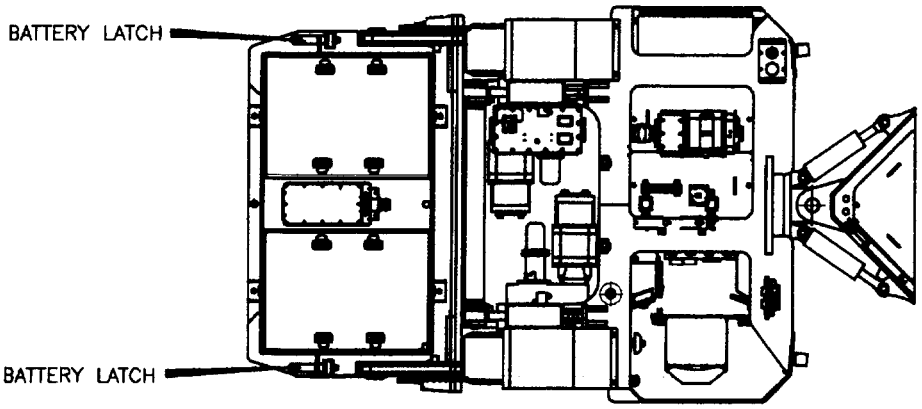


FIGURE 25

3. Lower the battery completely to the surface by pushing the "BATTERY" change control lever away from the operator. The bottom of the battery should touch the surface (Figure 26).

WARNING

NEVER ATTEMPT TO DISCONNECT A HYDRAULIC HOSE FROM THE BATTERY LIFTING CYLINDERS WHILE THE BATTERY IS IN THE UP POSITION. THIS COULD CAUSE THE BATTERY TO FALL AND COULD RESULT IN SERIOUS

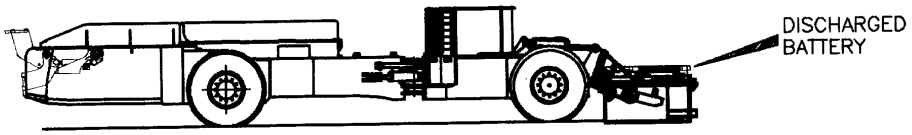


FIGURE 26

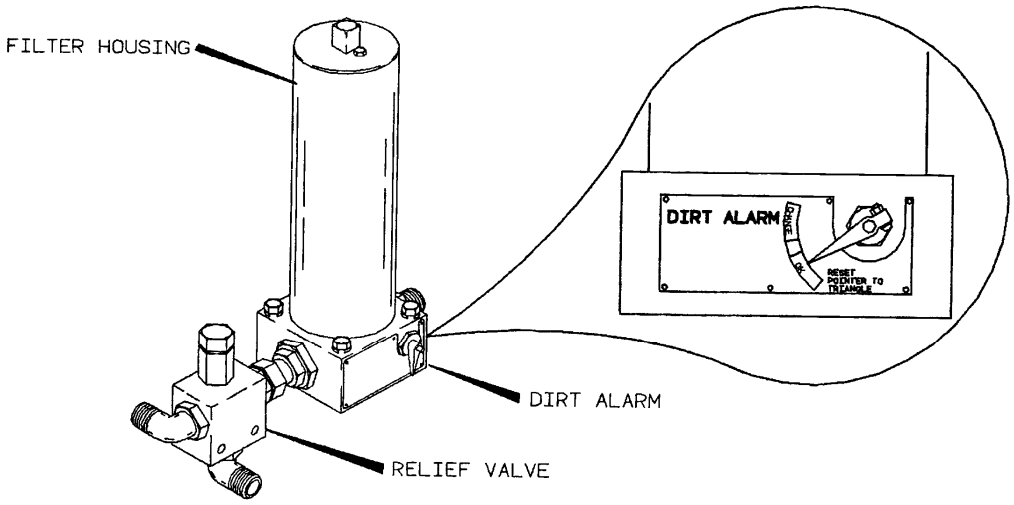
4. After the battery is fully lowered, shutdown-the Un-A-Hauler (see Shutdown Procedure, page 21).

5. After shutting down the Un-A-Hauler, disconnect the discharged battery (Figure 23):

   A. Unlock and remove the padlock at the battery connector .
   B. Grasp the threaded lock ring and rotate it counterclockwise (CCW) until the threads are disengaged and it is free to slide away from the locking lug; the lock ring is designed to move freely but to not come off the plug.
   C. Grasp the plug and pull it out until the plug is completely disconnected from the receptacle; the plug is made to fit very tightly inside the battery receptacle and-should not be driven out of the receptacle, dropped, or handled roughly; if the plug (or receptacle) is damaged, it will not fit together properly.
   D. Install the cap which is secured to eac receptacle on the battery by a small chain; this cap is placed over the threaded receptacle and rotated in a clockwise (CW) direction until hand tight and until a padlock will fit into the locking lug; the padlocks all use the same key.

6. Connect the jumper cable:

   A. Connect the receptacle end of the jumper cable to the plug coming out of the connection box on the Un-A-Hauler (Figure 27).



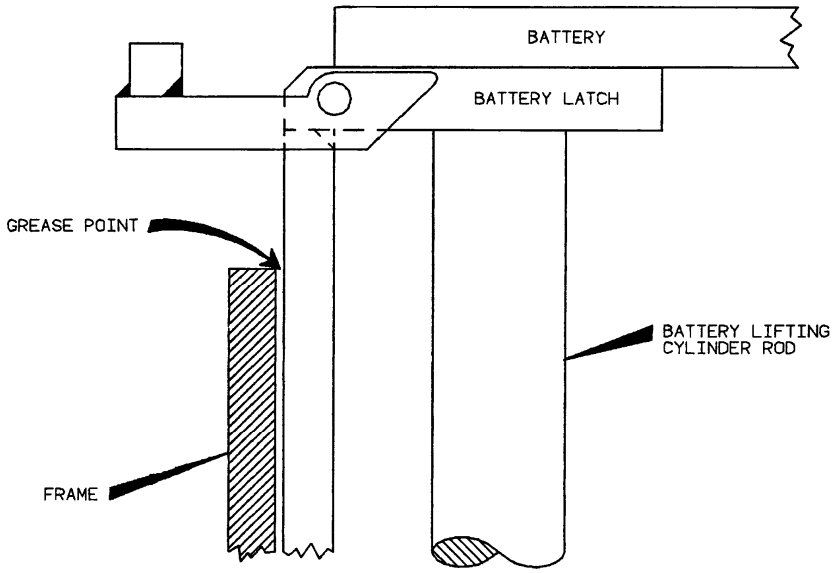
HYDRAULIC OIL FILTER AND DIRT ALARM
FIGURE 35

CAUTION

DO NOT OPERATE THE UN-A-HAULER WITH THE HYDRAULIC OIL FILTER INDICATOR IN THE RED ("CHANGE") POSITION. TO DO SO WILL DAMAGE THE HYDRAULIC SYSTEM.

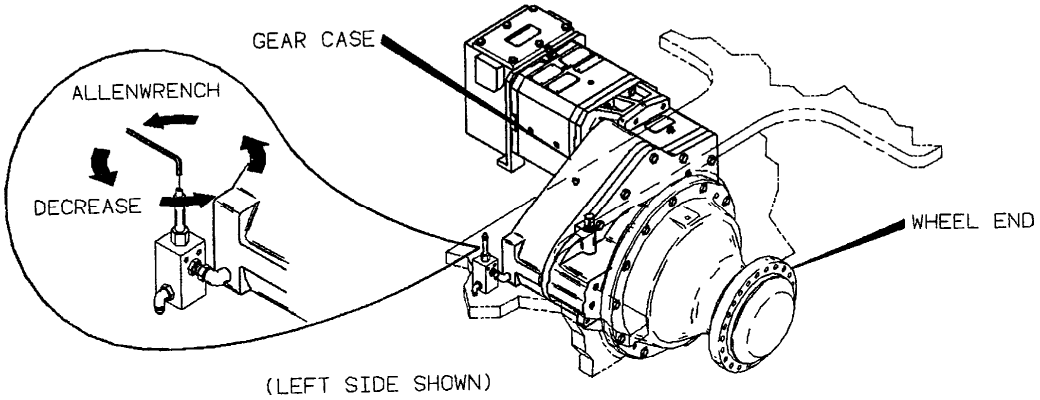
4. Check the panic strips. Start the Un-A-Hauler, but do not tram. Strike the panic strips to be certain that they are operating properly, tripping the machine circuit breaker and shutting down the Un-A-Hauler.

5. Lubricate the battery hold-down latch by placing a small amount of grease between the battery latch and the Un-A-Hauler frame (Figure 36). (Standard Machines)



BATTERY HOLD-DOWN LATCH LUBRICATION
FIGURE 36

H. Replace the cap on the relief valve.
I. Remove the gauge and replace the hose into the relief valve.



BRAKE COOLING CIRCUIT RELIEF VALVE
FIGURE 45

5. Check (and adjust if necessary) the sequence of operation of the false bottom/ejector blade.

WARNING

BEFORE MOVING THE "EJECTOR" CONTROL LEVER, MAKE SURE NO ONE HAS ANY PART OF HIS BODY BETWEEN THE BACK OF THE EJECTOR BLADE/FALSE BOTTOM AND THE FRONT OF THE REAR (PAYLOAD) SECTION.

A. When the ejector/false bottom is being retracted, the ejector blade should return to the back of the false bottom before the false bottom starts to move.
B. When the ejector blade/false bottom is extended, the false bottom should extend before the ejector blade extends. When the ejector blade/false bottom is retracted, the ejector blade should retract before the false bottom retracts.

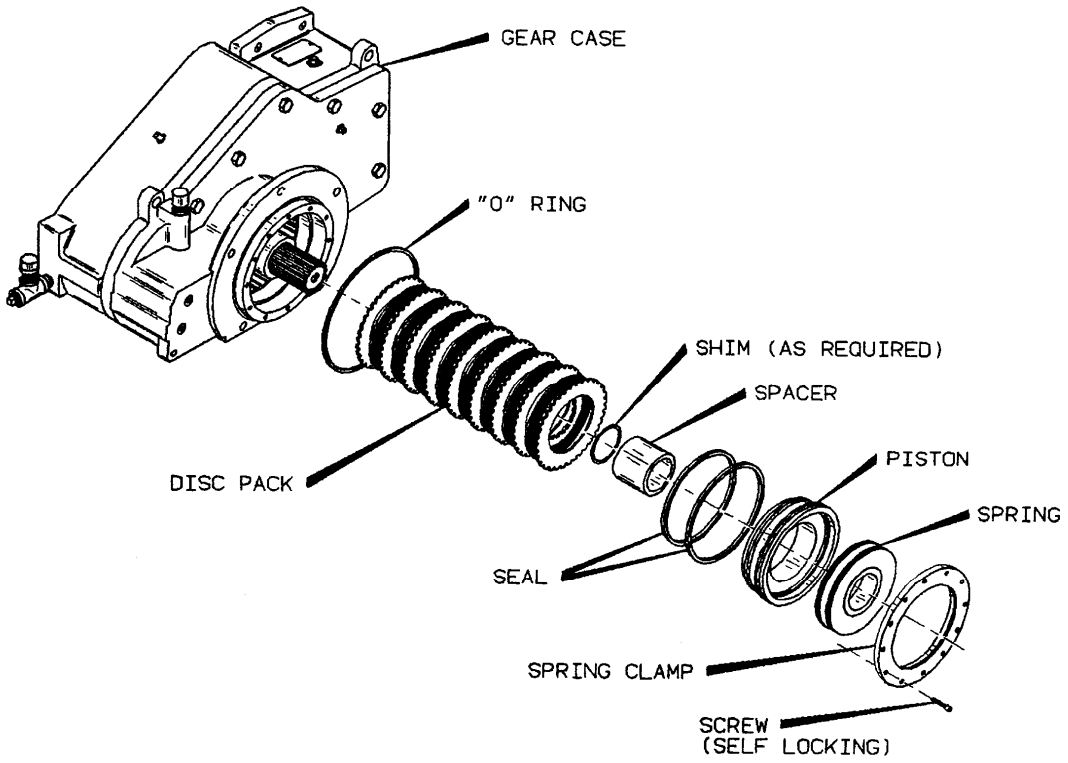
To adjust the sequence valve:

C. Extend the ejector blade/false bottom to the rear of the payload section and shutdown the machine (see Shutdown Procedure, Page 21).
D. Adjust the sequence valve.
E. Start the machine and cycle the ejector blade/false bottom.
F. Repeat the procedure until the adjustment is complete.

6. Clean or replace the suction strainer inside the hydraulic oil tank.

A. Remove the suction hose to the pump and allow the oil to drain.
B. Remove the old strainer by unscrewing it from the fittings that hold the strainer inside the tank (Similar to Figure 46).
C. Replace the strainer with a new one or thoroughly clean the old one with kerosene and a soft brush. Dry the cleaned strainer with air before replacing it in the tank.
D. Replace the strainer in the tank and tighten hand-tight.
E. Replace the suction hose.
F. Refill with hydraulic oil (for Lubricant Specifications, see page 36).

EXCESSIVE ACCUMULATOR LEAKAGE WHEN BRAKES ARE NOT BEING USED	1. Defective ball valve in charging valve. 2. Defective guide in charging valve. 3. Seal leaking in charging valve. 4. Guide sticking in plug due to contamination. 5. Defective seal on piston.	1. Replace ball valve. 2. Replace guide. 3. Replace seal. 4. Remove and clean the guides. 5. Replace seal.
INSUFFICIENT BRAKES	1. Broken pressure regulating spring.	1. Replace pressure regulating spring.
HYDRAULIC CYLS.		
CYLINDER DRIFTS	1. Piston seal leak. 2. Other circuit leaks.	1. Replace seals. 2. Correct leaks.
CYLINDER FAILS TO MOVE THE LOAD WHEN ACTUATED	1. Pressure too low. 2. Piston seal leak. 3. Piston rod broken at piston end. 4. Contamination in hydraulic system resulting in scored cylinder bore.	1. Check pressure at cylinder to make circuit requirements. 2. Replace seals. 3. Disassemble and replace piston rod. 4. Disassemble and replace necessary parts.
ERRATIC OR CHATTER IN OPERATION	1. Excessive friction due to misalignment.	1. Correct cylinder to load alignment.
EXCESSIVE OR RAPID PISTON SEAL WEAR	1. Excessive high back pressure due to over adjustment.	1. Correct pressure adjustment.
CYLINDER BODY SEAL LEAK	1. Excessive pressure. 2. Seal is pinched or extruded. 3. Seal deterioration (soft or gummy).	1. Reduce pressure to rated limits. 2. Replace cylinder body seal. 3. Check compatibility of seal material with operating fluid. Replace oil.
TROUBLE, SYMPTOM OR CONDITION	**PROBABLE CAUSE**	**TEST, CHECK AND/OR REMEDY**



BRAKE PACK INSTALLATION
FIGURE 50

PLANETARY WHEEL END REMOVAL AND REPLACEMENT

1. Planetary Wheel End Removal:

   A. Raise and securely block the Un-A-Hauler's drive wheels off the ground.
   B. Remove the tire-wheel assembly.
   C. Attach a sling and hoist to the wheel end and take up any slack in the sling.
   D. Remove the bolts that secure the wheel end to the frame.

2. Planetary Wheel End Replacement:

WARNING

THE CORRECT NUMBER OF SHIMS TO USE IN BETWEEN THE GEAR CASE AND PLANETARY WHEEL END MUST BE DETERMINED BEFORE INSTALLING EITHER THE GEAR CASE OR THE PLANETARY WHEEL END (SEE SHIM PROCEDURE THAT FOLLOWS).

   A. Clean all mating surfaces (wheel end and frame) thoroughly.
   B. Place the correct number of shims (as determined in the shim procedure) on the gear case.
   C. Using a sling and hoist, raise the wheel end to the frame.
   D. Align the gearing.
   E. Secure the wheel end to the frame with the bolts torqued to 240 ft./lbs. (lubricated threads) 540 Nm (dry threads). The wheel end mounting bolts should be tightened in the sequence shown in Figure 53.
   F. Check all oil levels before operating the unit.